

REMARKS

Claims 1-47 were pending in this case on entrance of the preliminary amendment. Claims 1-41 were said to be withdrawn from consideration as directed to a non-elected invention. Claims 1, 3, 4, 9, 13 and 17 were rejected. Claims 2, 5-8, and 11-16 were objected to as dependent upon a rejected base claim, but were said to be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

The Office Action mailed on January 29, 2004 did not consider claims 42-47 which depended from claim 41 and did not discuss Applicant's arguments traversing the restriction requirement. In a telephone interview on April 15, 2004, Examiner Fortuna indicated that she had intended to maintain the restriction requirement for all of the claims. Claims 1-17 were the elected claims of Group I.

This response cancels claim 1, amends claim 2 to include all of the limitations of claim 1 and amends claims 3, 4, 6, 7, 9, 10, 11 and 17 to make them depend ultimately from claim 2. Claim 17 is now directed to a membrane reactor comprising one or more gas-impermeable membranes of claim 2. All of claims 2-17 should now be considered allowable.

Original claims 18-27 and 33-36 were also directed to reactor membranes as were claims 41-43 added by preliminary amendment. Applicant had argued that claims 18-27, 33-36 and 41-43 should also be grouped into elected Group I, in part, because claim 17 which was directed to a reactor membrane was included in Group I. This response amends claims 18, 33 and 41 so that they depend from claim 17 (all of claims 18-27, 33-36 and 41-43 now depend from claim 17). It is believed that claim 17 as amended to depend from claim 2 and all of claims 18-27, 33-36 and 41-43 should be considered with the Group I elected claims and that they should now all be considered allowable.

Original claims 28-32 and 37-40 and claims 44-47 added by preliminary amendment were all directed to methods of using the membranes and reactors of Group I. To emphasize the relationship among the method claims, all of claims 28-32, 37-40 and 44-47 have been canceled and replaced by new claims 50-80 which in large part retain the subject matter of the early presented claims. All of claims 51-80 depend from claim 50. All of the method claims 50-80 should be Group in the Group III claims of the restriction requirement. The method of claim 50 recites the use of the reactor of claim 17 which in turn recites one or more membranes of claim 2.

Since all of the method claims recite the use of the reactor of claim 17, Applicant respectfully requests rejoinder of the method claims 50-80 of Group III with the membrane and reactor claims of Group I. Since all of the method claims depend from claim 17, which is believed to be allowable, it is believed that all of claims 50-80 should also be considered allowable.

Claim Amendments

The Membrane Claims:

Claim 1 has been canceled.

Claim 2 has been amended to include all the limitations of claim 1 from which it depended and the claim has been made independent.

Claims 3, 4 and 6 have been amended so that they now depend from claim 2.

Claim 7 has been amended so that it depends from claim 6 to correct antecedent basis.

Claims 9 and 10 have been amended so that they depend from claim 2.

Claim 11 has been made dependent from claim 2 and portions of the claim that are redundant over claim 2 have been deleted. This claim has also been amended to correct an obvious typographic error in line three, "external surface" has been replaced with "external region."

The Membrane Reactor Claims:

Claim 17 has been amended to depend from claim 2 and the term "membranes" has been rewritten as "gas-impermeable, mixed electron- and ion-conducting membranes" for improved consistency of language with claim 2.

Claim 18 has been made dependent upon claim 17 which in turn depends from claim 2. The claim has also been amended for consistency of language and for improved antecedent basis with claim 17 and claim 2.

Claim 24 has been amended to delete what is believed to be an unnecessary limitation.

Claim 26 has been amended to correct an obvious error in claim dependency. The claim now depends from claim 24 which recites a "steam reforming catalyst."

Claim 27 has been amended for improved antecedent basis with claim 18 by replacing "external surface" with "an oxidizing or reducing surface."

Claim 33 has been made dependent upon claim 17 which in turn depends from claim 2. The claim has also been amended for consistency of language and for improved antecedent basis with claim 17 and claim 2.

Claim 41 has been made dependent upon claim 17 which in turn depends from claim 2. The claim has also been amended for consistency of language and for

improved antecedent basis with claim 17 and claim 2. The claim now recites that the outside surfaces of the two external regions of each membrane form first and second outside surfaces of each membrane.

Claim 43 has been amended for proper antecedent basis with amended claim 41.

Claim 44 is cancelled as redundant over claim 18 as amended.

New claim 48 has been added which depends from claim 11. New claim 48 is supported by original claims 11 and 17.

New claim 49 has been added which depends from claim 11. New claim 49 is supported by original claim 11.

The Method Claims:

Method claims 28-32, 37-40 and 44-47 have been canceled and the subject matter of these method claims has been retained, at least in part, in new claims 50-80.

New method claim 50 depends from reactor claim 17 and is directed to a method for separating an ionic species from an ion source gas. New method claim 50 is supported by the claims as filed and in the specification, particularly at page 5, lines 10-12 where ions are said to be formed at an external surface of the membrane and transported to the other external surface of the membrane where they may react with reactant gas.

New claim 53 which depends from new claim 50 recites that the separated ionic species is a reactive ion which reacts with a reactant gas in the reaction zone to generate a product. New claim 67 recites that the reactive ion is a reactive anion, that the reagent zone is a reduction zone and the reaction zone is an oxidation zone and

that the reactant gas is a reduced gas. New claim 71 recites that the reactant ions are carbonate ions, the reduced gas comprises methane or another volatile hydrocarbon and that the product generated is synthesis gas.

The method claims have been rewritten to emphasize the technical relationship among the methods originally claimed.

None of the claims adds new matter to the specification. On entrance of this amendment claims 2-27, 33-36, 41-43 and 48 to 80 are pending in this case. Claims 2-27, 33-36 and 41-43 which all ultimately depend from claim 2 should be grouped into Group I and claims 50-80 which also ultimately depend from claim 2 should be grouped into Group III. Again Applicant respectfully requests rejoinder of the claims of Group I and Group III.

The Rejections

Claims 1, 3, 4, 9, 13 and 17 were rejected as unpatentable over Vangrunderbeek. Claim 1 has been canceled and claims 3, 4, 9, 13 and 17 have been amended so that they now depend from claim 2. Claim 2 is considered by the Examiner to be patentable over the cited reference. In view of the amendments to the claims this rejection is obviated.

Amendments to the Specification

The specification has been amended to correct a number of obvious typographic and/or clerical errors. None of the amendments made adds new matter to the specification.

Misspelled words are corrected on page 3 (lines 2 and 16), page 4 (line 6), page 5 (lines 7 and 25), page 8 (line 23), page 9 (line 26), page 11 (line 3), page 15 (line 1), page 16 (lines 10 and 25), page 17 (line 10), page 19 (line 1), page 20 (lines 18 and

20), page 21 (lines 6 and 9), page 23 (lines 24 and 11), page 25 (lines 16, 24, and 25), page 26 (line 17), page 29 (line 15), and page 30 (line 2).


Punctuation errors, font errors and word spacing errors have been corrected on page 5 (line 25), page 7 (line 19), page 8 (lines 15 and 16), page 9 (line 9), page 10 (line 22), page 13 (lines 19 and 21), page 16 (line 7), page 19 (line 4), and page 24 (lines 21, 22 and 24).

Conclusion

This response is accompanied by a Petition for Extension of Time of one month and a check in the amount of 55.00.

All of the claims remaining in this case are believed to be in condition for allowance and passage to issuance is respectfully requested. This amendment adds 10 additional dependent claims and is believed to require fees for excess claims in the amount \$90.00. If the fees enclosed are not incorrect, please charge any underpayment or credit any overpayment to deposit account 07-1969.

Respectfully submitted,


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